A.D. 1852 . . . . . 227.

SPECIFICATION

OF

BENJAMIN MITCHELL.

ARTIFICIAL LEGS.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
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1854.

A.D. 1852 . . . . . N° 227.

Artificial Legs.

LETTERS PATENT to Benjamin Mitchell, of Romsey, in the County of Hants, Builder, for the Invention of "IMPROVEMENTS IN THE CONSTRUCTION OF ARTIFICIAL LEGS."

Sealed the 5th April 1853, and dated the 5th October 1852.

PROVISIONAL SPECIFICATION left by the said Benjamin Mitchell at the Office of the Commissioners of Patents, with his Petition, on the 5th October 1852.

I, BENJAMIN MITCHELL, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN THE CONSTRUCTION OF ARTIFICIAL LEGS" to be as follows:—

The object of this Invention is to construct the joints of an artificial limb in such a manner that the wearer may with facility perform the various motions required in walking, kneeling, riding, and other actions.

This object is effected principally by the use of a spring or springs, which I term muscular spring cords; these muscular springs lead from the hip joint through the knee to the leg, and thereby cause the necessary actions.

Mitchell's Improvements in the Construction of Artificial Legs.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Benjamin Mitchell in the Great Seal Patent Office, on the 5th April 1853.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, BENJAMIN MITCHELL, of Romsey, in the County of Hants, Builder, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Fifth day of October, in the year of our Lord One thousand eight hundred and fifty-two, in the sixteenth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Benjamin Mitchell, Her special license that I, the said Benjamin Mitchell, my executors, administrators, and assigns, or such others as I, the said Benjamin Mitchell, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN THE CONSTRUCTION OF ARTIFICIAL LEGS," upon the condition (amongst others) that I, the said Benjamin Mitchell, by an instrument in writing under my hand and seal, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Benjamin Mitchell, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the Drawings hereunto annexed, and to the letters and figures marked thereon (that is to say):

This Invention relates to a novel construction of artificial leg, the principal object being, by means of the movement of the thigh, whether in walking or when sitting down or rising from a seat, to communicate

a motion to the knee joint analogous to that of the bending of the natural knee.

In carrying out this object I construct the limb, by preference, of thin sheet metal, and form the part below the knee in any ordinary manner, giving the foot such elasticity in the tread as may be required.

To this lower part I joint two curved plates, which are fitted to embrace the stump of the amputated member; and, besides the rigid connection formed between these parts by the joint pins, I connect the upper and lower parts together by elastic straps, which are secured to a belt passing round the waist of the wearer of the artificial limb, and are capable of acting alternately, according to the motions of the hip joint, so as to straighten or bend the limb.

The manner of carrying out this Invention is shewn in the accompanying Drawing, wherein Fig. 1, is a partial elevation of the improved construction of limb forming the subject of the present Invention; and Fig. 2, is a vertical section of the same. *a*, *a*, is the lower part of the limb, and *b*, *b**, the two curved plates, which are connected at *c*, to each other and to the part *a*. These plates *b*, *b**, are each provided with a rest *d*, over which is placed a cushion to receive the stump of the amputated member, and the plates are bound tightly to the stump by means of a strap *e*. The front part of the curved plate *b**, is made hollow to receive a strap *f*, which passes down from the belt round the body of the wearer of the artificial limb through this hollow channel, and is attached to the lower part *a*, of the limb near the upper part of the calf. The lower end of the plate *b**, is shaped to fit the part *a*, and to work therein like a ball and socket attachment, and thus the appearance of the natural knee, whether the limb be bent or straightened, is attained. Near the point where the strap *f*, is attached to the part *a*, a second strap *g*, is also secured. This strap passes upwards (on the opposite side of the joint *c*, to that of the strap *f*,) through a slot cut in the back of the plate *b*, and thence to the belt before mentioned. When, therefore, the party wearing the limb commences the movement necessary to seat himself, that is, to bring the thigh to a horizontal line, the strap *g*, will be drawn to tension, and thereby the point 1, of the

part *a*, (which is the point of attachment of the straps) will be caused to approach the point 2, of the part *b*, (which is the bearing point of the strap *g*,) until the upper and lower parts of the limb assume the position with respect to each other as indicated by the dotted lines of Fig. 2, the strap *f*, being simultaneously slackened by the nearer approach of the forward part of the belt towards the knee to allow of this action. As soon, however, as the wearer of the limb begins to rise, a corresponding slacking of the strap *g*, and taking up of the slack of the strap *f*, will take place, and thus the limb will be again drawn out of its bent into its straight position. It will thus be understood that, instead of employing internal springs (as in the ordinary construction of artificial limbs) to keep the leg straight, the effect of which is to necessitate the expenditure of some considerable power (to counteract the pressure of the springs) before the knee can be bent to suit the sitting posture, the proper action of the knee is rendered compulsory and answers to the action of the hip joint, which action causes the tension of the one strap while it slackens the other to allow of that tension being made serviceable for moving the limb.

Having thus described the nature of my Invention, and the manner of carrying the same into effect, I wish it to be understood that, under the above in part recited Letters Patent, I claim as of my Invention of improvements in the construction of artificial legs the mode of controlling the action of the limb by the action of the hip joint, as above explained.

In witness whereof, I, the said Benjamin Mitchell, have hereunto set my hand and seal, this Fifth day of April, One thousand eight hundred and fifty-three.

BENJAMIN MITCHELL. (L.S.)

Witness,

J. W. MOFFATT,
66, Chancery Lane.

LONDON:
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Printers to the Queen's most Excellent Majesty. 1854.

A.D. 1852. Oct: 5 Nº 227.
MITCHELL'S SPECIFICATION.

(1 SHEET)

FIG. 1.

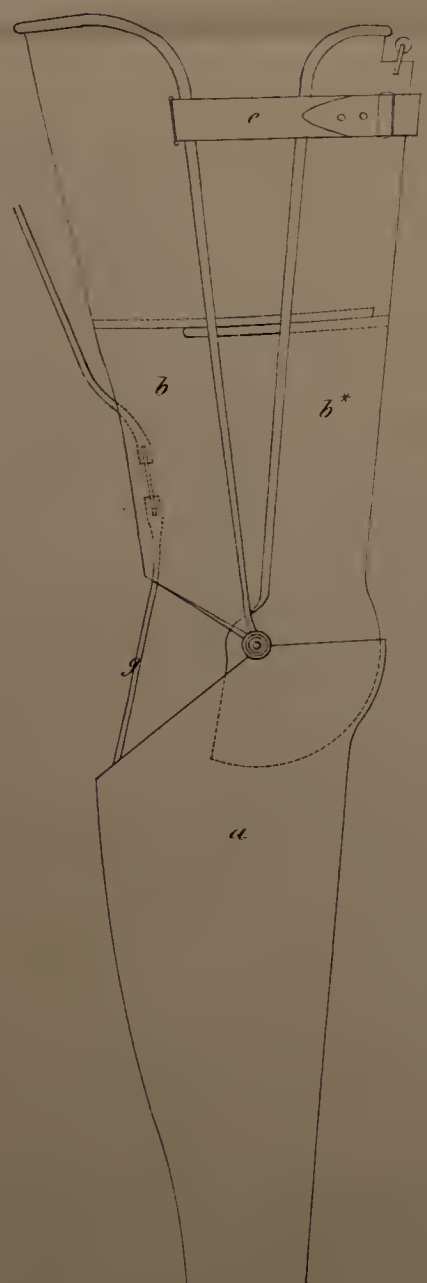
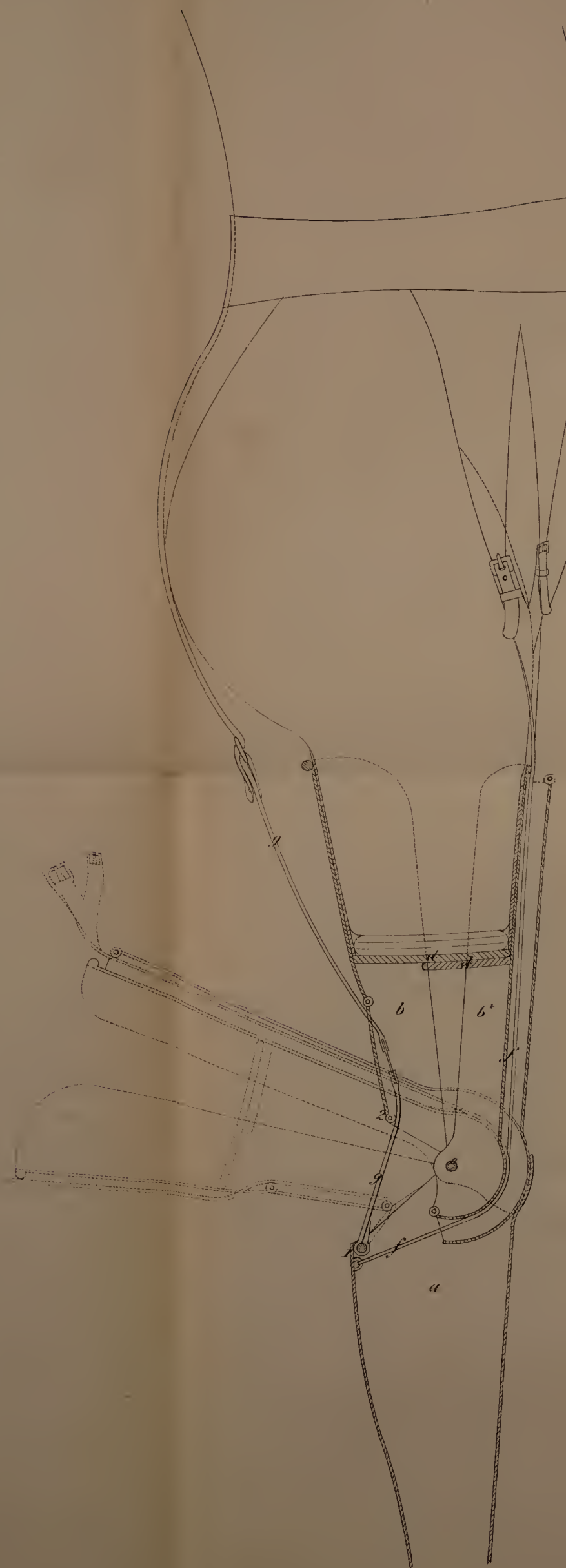


FIG. 2.



The litel drawing is partly colored.